University of Bahrain
College of Information Technology
Department of Computer Science
Semester 2, 2013-2014
ITCS 101/ITCS 103 (Computer Programming)

Test 2 – Form A (Key Answers)

Date: 4th May 2014 **Time: 3:00-4:30PM**

STUDENT NAME	
STUDENT ID #	
SECTION #	

NOTE: THERE ARE SIX (6) PAGES IN THIS TEST
WRITE ONLY ONE SOLUTION FOR EACH QUESTION

Question #	MARKS		COMMENTS
1	10	Dr.	A. Fattah
2	10	Dr.	Ali Al-Saffar
3	10	Dr.	Lamya
4	10	Dr.	Fawzi
TOTAL	40		

Question 1 (10 Points)
What is the output of the following codes?

(1)
```
int x=30;
int i=2;
bool go = true;
while (go){
      x-=i;
      if (x <= 0)
            go= false;
      i = i * 10;
      cout<<x<<"\t"<<i<<endl;
}
```

28 20
8 200
-192 2000

+0.5 each

+3

(2)
```
int h = 20;
switch( h / 10 ){
      case 0: cout<<"Python\n"; break;
      case 1: case 2: cout<<"Java\n"; break;
      default: cout<<"C++\n";
}
cout<<"is Programming Language";
```

Java
is Programming Language

+1.5

(3)
```
int x = 4;
do {
      if ( x % 2 == 0)
            continue;
      cout << x << "\t";
      --x;
} while ( x > 0 );
```

NO output
Infinite Loop

+1

(4)
```
int r,c;
for(c=1;c<=3;++c){
     for(r=1;r<=2;++r)
          cout<<c;
     cout<<endl;
}
```

11
22
33

+0.5 each digit

+3

(5)
```
int x=5, y=7;
cout<< ( x+y > 15 ? x * 2 : y * 2 )<<endl;
```

14

+1.5

Question 2 (10 Points)

A library in Hamad Town published a list of printing prices which are typically based on the number of copies to be printed. Here is the list:

Number of copies	Unit price (BD)
0-30	0.050
31-60	0.035
More than 60	0.025

Write a C++ program that prompts the user to enter a positive integer number representing the number of copies to be printed and then displays the price per copy and the total price for the job. Format the output to three decimal places precisions.

A sample input/output of the program is given below:

```
Enter the number of copies to be printed: 155
Price per Copy is BD 0.025
Total Price is BD 3.875
```

```
#include<iostream>
#include<iomanip>
using namespace std;
int main(){
        int copies;
        float unit, total;     +1

+0.5    cout<<"Enter the number of copies to be printed:";
        cin>>copies;

        if (copies<=30)
              unit=0.050;
        else if (copies<=60)          +3
              unit=0.035;
        else
              unit=0.025;

        total = copies * unit;     +1

        cout<<fixed<<showpoint<<setprecision(3);     +1

        cout<<"Price per Copy is BD "<<unit<<endl;     +1.5
        cout<<"Total Price is BD "<<total;

        return 0;
}
```

+1

Question 3 (10 Points)

Write a C++ Currency Converter program that asks the user to enter today's **Exchange Rate** between Bahraini Dinars and U.S. Dollars. Then the program reads 10 Bahraini Dinars amounts and displays each amount converted to U.S. Dollars amount as follows:

U.S. Dollars Amount = Bahraini Dinars Amount X Exchange Rate

Format the output to 2 decimal places precisions.

A sample input/output of the program is given below:

```
How many U.S. Dollars is one Bahraini Dinar? 2.6

1) Enter Amount in Dinars: 100
100.00 Dinars = 260.00 Dollars
....
....
10) Enter Amount in Dinars: 20
20.00 Dinars = 52.00 Dollars
```

```
#include <iostream>
#include <iomanip>

using namespace std;
int main() {
        float rate, dinars, dollars;        ] +1
        int c =1;

        cout<<fixed<<showpoint<<setprecision(2);        ] +0.5

        cout << "How many U.S. Dollars is one Bahraini Dinar? ";   ] +1.5
        cin >> rate;

        while (c <= 10) {
                cout << c<<") Enter Amount in Dinars: ";   ] +1.5
                cin >> dinars;
                dollars = dinars * rate;   ] +1
                cout << dinars << " Dinars = " << dollars << "   ] +1
Dollars" << endl;
                ++c;
        }

        return 0;
}
```

Question 4 (10 Points)

The number of gold, silver, and bronze medals won at the Olympic Games by each country has been stored in an input file named "**Medals.txt**". Write a C++ program that reads the country name, number of gold, silver, and bronze medals won by the country. The program should find and print the total number of medals for each country in an output file named "**Olymbic.txt**" with the country name. Your program should print a proper message if the input file cannot be opened.

SAMPLE INPUT/OUTPUT

Medals.txt (input file)			
China	10	15	7
Tunisia	5	8	12
Germany	4	2	10
USA	2	10	5
....			

Olympic.txt (output file)	
Country	Total Medals
China	32
Tunisia	25
Germany	16
USA	17
....	

```
#include <fstream>
#include <iostream>
#include <string>
using namespace std;
int main()
{
      ifstream infile;
      ofstream outfile;
      int gold, silver, bronze, total;
      string country_name;
      infile.open("Medal.txt");
      outfile.open("Olymbic.txt");
      if (!infile){
            cout<<"The file cannot be opened";
            return 1;
      }
      outfile<<"Country\tTotal Medals\n";
      infile>>country_name;
      while(infile)
      {
            infile>>gold>>silver>>bronze;
            total= gold+silver+bronze;
            outfile<<country_name<<"\t"<<total<<endl;
            infile>>country_name;
      }
      infile.close();
      outfile.close();

      return 0;
}
```